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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/828,894	04/20/2004	Hyung-Rok Oh	2522-057	5849
20575	7590	12/05/2005	EXAMINER	
MARGER JOHNSON & MCCOLLOM, P.C. 210 SW MORRISON STREET, SUITE 400 PORTLAND, OR 97204			PHAN, TRONG Q	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 12/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/828,894	Applicant(s) OH ET AL.	
	Examiner TRONG PHAN	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 3 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-9 is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 10 and 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The word "free" (line 29, page 3) should be changed to ---fixed---; the word "150may" (line 31, page 3) should be changed to ---150 may---.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 4-5 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naji, 5,946,227, in view of Parkin, 5,764,567, and Tehrani et al., 5,920,500.

Naji, 5,946,227, discloses in Fig. 1 a magnetic random access memory (MRAM) 10 comprising:
bit line 12;
digit line 13;
word line 17 parallelly underneath and connected to digit line 13 via transistor 18;
magnetic tunneling junction (MTJ) memory cell 11.

What is not shown in Fig. 1 of Naji, 5,946,227, is the magnetic memory cell as recited in claims 1, 4-5 and 10-11.

Parkin, 5,764,567, discloses in Fig. 10 a magnetic tunneling junction (MTJ) memory cell comprising:
an antiferromagnetic layer;
a pinned/fixed ferromagnetic layer;
tunneling insulation junction;
free ferromagnetic layer.

It would have been obvious under 35 USC 103(a) to one of ordinary skill in the art at the time of the invention was made to utilize the magnetic tunneling junction (MTJ) memory cell in Fig. 10 of Parkin, 5,764,567, for the magnetic tunneling junction (MTJ) memory cell 11 in Fig. 1 of Naji, 5,946,227, for the purpose of improving control of the magnetic field response (see lines 11-16, column 1 of Parkin, 5,764,567).

What is not shown in Fig. 1 of Naji, 5,946,227, which is modified by Fig. 1 of Parkin, 5,764,567, is the substrate as recited in claims 1, 4-5 and 10-11.

Tehrani et al., 5,920,500, discloses the teaching of forming a conventional MRAM on a semiconductor substrate (see lines 41-45, column 1).

It would have been obvious under 35 USC 103(a) to one of ordinary skill in the art at the time of the invention as made to modify Fig. 1 of Naji, 5,946,227, which is modified by Fig. 1 of Parkin, 5,764,567, by the teaching of Tehrani et al., 5,920,500, for the purpose of integrating a plurality of magnetic tunneling junction (MTJ) memory cells in Fig. 1 of Naji, 5,946,227, which is modified by Fig. 1 of Parkin, 5,764,567, on a plane (see lines 41-45, column 1 of Tehrani et al., 5,920,500).

Allowable Subject Matter

4. Claims 6-9 are allowed.
5. The following is an examiner's statement of reasons for allowance:

The multiple input/output magnetic random access memory device including: a row driver, a first column driver, a second column driver, a plurality of input/output lines and a sensing-and-writing driver circuit as recited in claims 6-9 has not been found in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to TRONG PHAN whose telephone number is (571) 272-1794. The examiner can normally be reached on M-F (8:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, AMIR ZARABIAN can be reached on (571)272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

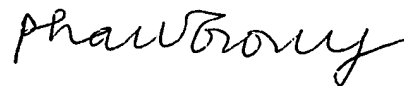
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR

Art Unit: 2827

only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Phan Trong', written in a cursive style.

**TRONG PHAN
PRIMARY EXAMINER**

Hyung-Rok OH, et al.
Attorney Docket No. 2522-057/Application No. 10/828,894

1/1

Replacement Sheet

Approved
TP

11/29/05

FIG. 1

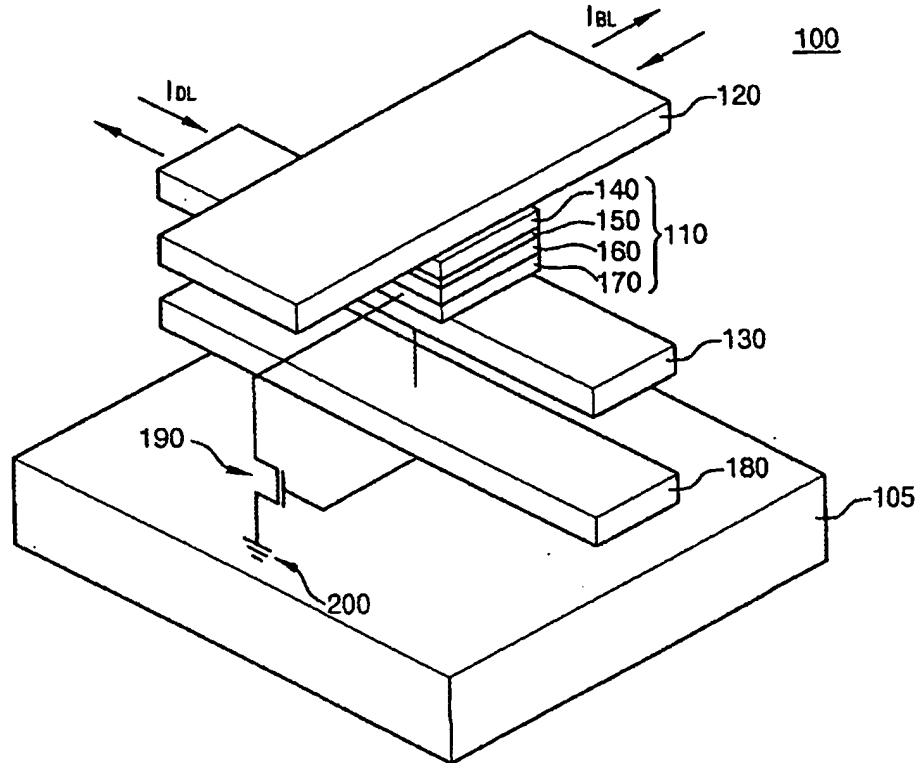


FIG. 2

